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I&T 100 YEARS OF LEADERSHIP

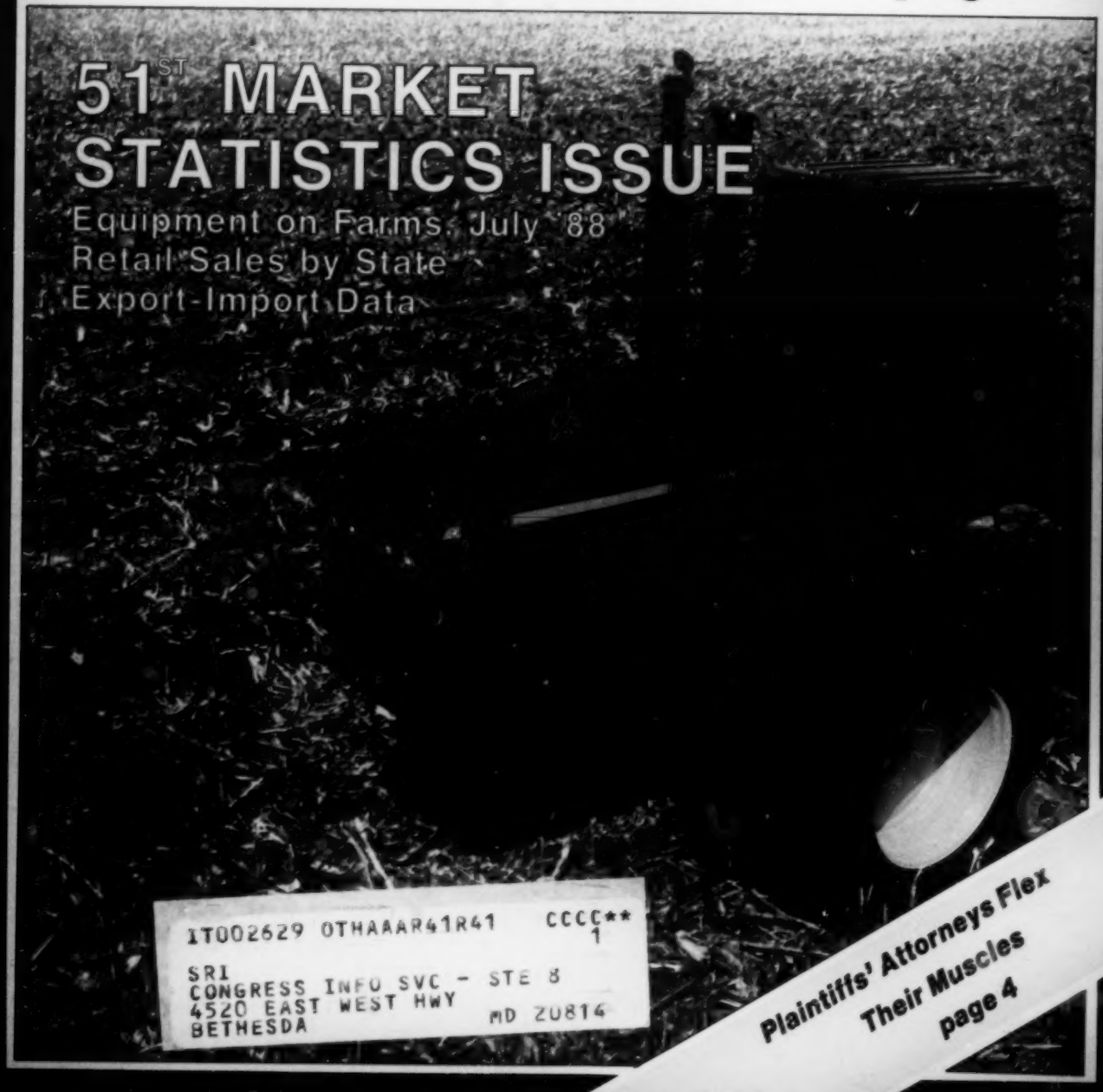
# Implement & Tractor

*The business magazine of the farm and industrial equipment industry*

October 1988

## MARKETERS' SOUL SEARCH

page 18

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**Plaintiffs' Attorneys Flex Their Muscles**

page 4

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**Subscription Information:** Implement & Tractor is edited for persons in the farm and industrial equipment industry who function in the areas of retail sales and service, distribution sales and service, marketing, engineering, financing, manufacturing and general management. Subscription prices: U.S. and Canada one year — $15, three years — $30. Single copies, $3.50, except Annual Statistical Number, $4; Product File issue, $8; Red Book issue, $8. Extra charge for service on back issues. Allow 6-8 weeks for change of address and new subscriptions. Foreign subscriptions: Air Mail only available. One year — $100; Three years — $250 (U.S. currency).

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ISSN 0019-2953 $8.00 + 0.00

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***Farm Press Publications, Inc.***

I&T 100 YEARS OF LEADERSHIP

# Implement & Tractor

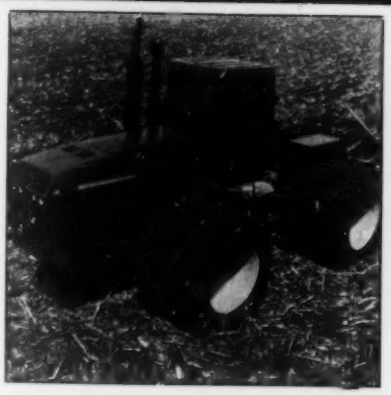
*The business magazine of the farm and industrial equipment industry.*

**October 1988 • Vol. 103 • No. 11**

## On Our Cover

*Implement & Tractor presents its 51st Market Statistics Issue—equipment inventories by state and type of product; retail sales by state; and import and export figures.*

**5-15**



## Features

**18:** **FIEI Old Fashion** Sales & Marketing Meeting in Chicago drew a large number of participants from the industry. The meeting was the result of survey last year which showed a sense of confusion as to the basics of marketing equipment to farmers.

**24:** **Old name:** National Farm & Power Equipment Dealers Assn. New name: North American Equipment Dealers Assn. And a long debate ends. J.A. Wilson is the new president.

**27:** **A dealer writes** about getting back on the right track after the termination of his dealership.

**28:** **Deere & Co.** introduced its 60 series four-wheel-drive tractors to its dealers at Denver. The company has its work cut out for it if it is to increase its share of the market.

## Departments

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**IMPLEMENT & TRACTOR** (USPS 461-750, ISSN-0019-2953) is published monthly, except combined November, December issue, and March and October, when two issues are published by Farm Press Publications, Inc., P.O. Box 1420, Clarksdale, Mississippi, and additional mailing offices. POSTMASTER: Send Form 3579 to P.O. Box 1420, Clarksdale, Mississippi 38614.

## Motor Vehicles and Specified Machines on U.S. Farms and Average Prices of Wheel Tractors, January 1, Designated Years[1]

| YEAR | TRACTORS (exclusive of steam & garden)[2] Thousands | MOTOR TRUCKS Thousands | GRAIN COMBINES Thousands | CORN PICKERS and PICKER SHELLERS Thousands | PICK-UP BALERS Thousands | FIELD FORAGE HARVESTERS Thousands | GARDEN TRACTORS and MOTOR TILLERS[3] Thousands | WHEEL TRACTORS WHOLESALE PRICES[4] Per Unit Dollars | Horsepower Dollars |
|---|---|---|---|---|---|---|---|---|---|
| 1965 | 4,787 | 3,030 | 910 | 690 | 751 | 316 | 699 | $ 3,541 | $ 56 |
| 1966 | 4,783 | 3,017 | 888 | 686 | 752 | 316 | 725 | $ 3,886 | $ 58 |
| 1967 | 4,786 | 3,009 | 867 | 680 | 748 | 319 | 750 | $ 4,257 | $ 62 |
| 1968 | 4,766 | 3,016 | 847 | 673 | 739 | 321 | 770 | $ 4,709 | $ 66 |
| 1969 | 4,712 | 3,004 | 820 | 657 | 725 | 314 | 790 | $ 4,976 | $ 71 |
| 1970 | 4,619 | 2,978 | 790 | 635 | 708 | 304 | 805 | $ 5,560 | $ 76 |
| 1971 | 4,562 | 2,985 | 760 | 629 | 698 | 309 | 815 | $ [illegible]90 | $ 80 |
| 1972 | 4,509 | 2,993 | 725 | 625 | 687 | 315 | 825 | $ 6,486 | $ 84 |
| 1973 | 4,477 | 3,006 | 703 | 618 | 680 | 324 | 835 | $ 6,953 | $ 85 |
| 1974 | 4,478 | 3,020 | 685 | 618 | 677 | 332 | 850 | $ 7,294 | $ 86 |
| 1975 | 4,463 | 3,032 | 666 | 615 | 666 | 337 | 870 | $ 8,459 | $ 91 |
| 1976 | 4,434 | 3,043 | 647 | 610 | 642 | 342 | 890 | $11,220 | $112 |
| 1977 | 4,381 | 3,052 | 630 | 605 | 614 | 346 | 905 | $12,692 | $124 |
| 1978 | 4,350 | 3,054 | 615 | 600 | 595 | 345 | 917 | $13,431 | $144 |
| 1979 | 4,623 | 3,350 | 655 | 596 | 744 | 295 | 927 | $16,512 | $149 |
| 1980 | 4,598 | 3,367 | 653 | 592 | 759 | 293 | 933 | $18,139 | $166 |
| 1981 | 4,573 | 3,385 | 650 | 587 | 774 | 291 | 938 | $23,308 | $199 |
| 1982 | 4,547 | 3,405 | 647 | 582 | 788 | 288 | 942 | $25,941 | $204 |
| 1983 | 4,520 | 3,427 | 644 | 576 | 799 | 285 | 944 | $34,198 | $237 |
| 1984 | 4,497 | 3,449 | 642 | 569 | 810 | 282 | 945 | $37,434 | $261 |
| 1985 | 4,480 | 3,467 | 640 | 561 | 822 | 280 | 942 | $40,730 | $290 |
| 1986 | 4,465 | 3,460 | 637 | 552 | 819 | 278 | 938 | .... | .... |
| 1987 | 4,443 | 3,446 | 632 | 540 | 812 | 273 | 933 | .... | .... |
| 1988 | 4,430 | 3,432 | 629 | 531 | 801 | 270 | 930 | .... | .... |

[1]SOURCE: Reports of the USDA and the Bureau of the Census. On-farm data after 1970, except 1975 and 1979, are estimated by I&T.
[2]Consists of Wheel and Crawler Tractors.
[3]Motor Tillers included after 1964.
[4]Estimated at wholesale level by dividing Value of Manufacturers' Shipments by Units Shipped and by Maximum Belt Horsepower; data are published in "Current Industrial Reports" of the Bureau of the Census. Not available after 1985.
Note: Data from the 1978 Census (Jan. 1, 1979 above) and later years, reflect changes in sample coverage and are not fully comparable with earlier years.

thought. Forage choppers sell with metal detection devices that shut them down, but there's no such shutoff for (people). No salesman has ever tried to sell me on a safety feature, and I own 25 pieces of machinery, each one of which can kill and maim.

"There are contributory causes of accidents such as the ages of operators — some are kids, some lack experience, some are old or in poor physical condition. Why is that so?"

He offered his own answer: "It's a matter of tradition and economic necessity. My kids are 10 and 11 and they drive my pickup truck. I'll be teaching them to drive tractors (soon). We also have to hire young kids to do farm work — 15 years old or so.

"My dad has slowed down and has no business on a tractor. He can't handle the long hours, but he's doing it because he wants to and because I need him. I'm the exploiter, and I work 60 hours a week, 80 in season. Sometimes we have to run day and night, and it's fatiguing. My newest tractor is a 1975 model and I have a 10-year-old combine. I have neighbors who have 40-hour jobs off the farm and then work all night and weekends....

"Meanwhile, the government gives exemptions (regarding safety regulations to farmers) that cost us arms and legs.

"We have to make farming economically feasible. We don't want to maim ourselves. But unless it's possible to make a living (in agriculture), the accidents will continue. We have to take the risks or lose our homes, our jobs, our farms."

Russ Hahn of ASAE outlined the function of his organization in forming voluntary safety standards for the industry. And he may have deflated part of the excitement of the meeting for some by pointing out National Safety Council data showing a decline in the death rate for agriculture, from 1986 to 1987, of 6 percent. He also disagreed with Libbra's assertion that safety is an afterthought.

"Work on ROPS, for example, began back in the 1960s, before our society became as litigious as it is today."

Carlton Zink, whose engineering career goes back to the 1920s, also spoke of efforts to improve farm equipment safety over decades, as well a farmers' general disinterest in ROPS and shielding for the pto. He described how today's slow-moving-vehicle emblem standard evolved from early efforts of the FIEI Safety Committee.

Arnold Skromme opened his remarks by telling the trial lawyers he was going to change their minds.

"Agricultural engineers are being blamed (for the bad accident/injury record), and we shouldn't be. We have developed good, even great standards.

"But farmers don't want safe machines. We need retrofits, but it isn't happening. Why doesn't the Occupational Safety & Health Administration do something? Because Congress tells it to keep its hands off of agriculture. Farmers and their political organizations don't want inspectors on their farms. And the shields we developed are thrown away."

Skromme made this suggestion: The government has a history of putting strings on the money it gives away. And we know that if more tractors had ROPS, we could cut the death rate from rollovers. Why can't

(MORE, next page)

## Principal Machines on Farms — 1988

| STATE | MOTOR TRUCKS 1978 Census Thousands | MOTOR TRUCKS 1982 Census Thousands | MOTOR TRUCKS Estimated July 1, 1988 Thousands | INTERNAL COMBUSTION ENGINES[1] Estimated July 1, 1988 Number | CHAIN SAWS Estimated July 1, 1988 Number |
|---|---|---|---|---|---|
| Maine | 12.3 | 12.2 | 11.9 | 1,300 | 7,170 |
| New Hampshire | 3.8 | 4.1 | 4.1 | 1,220 | 2,370 |
| Vermont | 6.6 | 7.5 | 7.8 | 1,700 | 5,960 |
| Massachusetts | 9.0 | 9.4 | 9.4 | 1,760 | 4,345 |
| Rhode Island | 1.3 | 1.3 | 1.3 | 185 | 605 |
| Connecticut | 6.6 | 6.8 | 6.6 | 1,545 | 3,640 |
| New York | 57.6 | 60.5 | 61.4 | 48,150 | 48,580 |
| New Jersey | 14.4 | 15.2 | 15.4 | 2,260 | 5,730 |
| Pennsylvania | 63.8 | 66.1 | 66.3 | 19,500 | 42,190 |
| Delaware | 6.2 | 6.2 | 6.1 | 910 | 2,430 |
| Maryland | 22.8 | 25.9 | 27.1 | 4,410 | 11,750 |
| NORTHEAST | 204.4 | 215.2 | 217.4 | 55,290 | 134,340 |
| Ohio | 107.1 | 107.8 | 106.7 | 18,670 | 58,470 |
| Indiana | 114.4 | 112.2 | 110.4 | 19,310 | 62,530 |
| Illinois | 150.6 | 150.6 | 148.1 | 28,740 | 68,000 |
| Iowa | 144.0 | 147.7 | 147.1 | 30,600 | 54,050 |
| Missouri | 155.9 | 159.7 | 160.3 | 31,600 | 90,550 |
| CORN BELT | 672.0 | 678.0 | 672.6 | 128,920 | 333,600 |
| Michigan | 77.4 | 80.3 | 80.7 | 17,380 | 43,750 |
| Wisconsin | 98.0 | 99.5 | 98.6 | 33,310 | 88,790 |
| Minnesota | 144.1 | 143.8 | 141.1 | 45,210 | 63,490 |
| LAKE STATES | 319.5 | 323.6 | 320.4 | 95,900 | 196,030 |
| North Dakota | 107.7 | 101.1 | 95.7 | 34,070 | 4,100 |
| South Dakota | 66.0 | 68.0 | 67.9 | 22,600 | 3,160 |
| Nebraska | 118.6 | 118.9 | 117.3 | 30,900 | 13,500 |
| Kansas | 160.8 | 159.4 | 155.9 | 39,830 | 22,270 |
| GREAT PLAINS | 453.1 | 447.4 | 436.8 | 127,400 | 43,030 |
| West Virginia | 19.2 | 20.5 | 20.7 | 4,840 | 20,850 |
| Kentucky | 119.3 | 125.2 | 127.1 | 15,560 | 42,770 |
| Tennessee | 96.4 | 104.7 | 108.1 | 11,990 | 56,700 |
| Virginia | 62.6 | 68.0 | 69.5 | 11,600 | 46,400 |
| North Carolina | 106.2 | 103.3 | 99.7 | 15,100 | 83,550 |
| APPALACHIAN | 403.7 | 421.7 | 425.1 | 59,090 | 250,270 |
| South Carolina | 36.1 | 34.6 | 33.1 | 5,950 | 23,600 |
| Georgia | 74.3 | 72.6 | 70.5 | 12,260 | 32,550 |
| Florida | 49.4 | 51.2 | 51.3 | 11,710 | 7,460 |
| Alabama | 68.6 | 67.4 | 65.7 | 9,970 | 30,740 |
| SOUTHEAST | 228.4 | 225.8 | 220.6 | 38,890 | 94,350 |
| Mississippi | 58.0 | 59.0 | 58.6 | 9,600 | 36,290 |
| Louisiana | 44.9 | 44.3 | 43.5 | 11,430 | 19,910 |
| Arkansas | 80.7 | 79.3 | 77.2 | 12,950 | 30,580 |
| DELTA STATES | 183.6 | 182.6 | 179.3 | 33,980 | 86,780 |
| Oklahoma | 118.3 | 122.8 | 124.4 | 19,400 | 9,860 |
| Texas | 239.0 | 249.9 | 262.4 | 57,900 | 19,270 |
| SOUTHERN PLAINS | 357.3 | 372.7 | 386.8 | 77,300 | 29,130 |
| Montana | 67.2 | 68.2 | 67.7 | 17,660 | 11,740 |
| Idaho | 56.7 | 57.1 | 56.2 | 14,460 | 13,110 |
| Wyoming | 20.0 | 22.1 | 22.9 | 5,720 | 3,180 |
| Colorado | 63.4 | 63.0 | 61.7 | 18,580 | 6,020 |
| New Mexico | 23.9 | 24.6 | 24.6 | 6,950 | 2,985 |
| Arizona | 15.3 | 16.6 | 17.0 | 4,760 | 510 |
| Utah | 21.7 | 23.3 | 23.8 | 6,030 | 2,350 |
| Nevada | 6.0 | 6.5 | 6.5 | 1,410 | 600 |
| MOUNTAIN STATES | 274.2 | 281.4 | 280.4 | 75,570 | 40,495 |
| Washington | 64.7 | 69.2 | 70.0 | 15,100 | 22,600 |
| Oregon | 54.4 | 61.2 | 58.3 | 19,580 | 25,660 |
| California | 134.6 | 147.9 | 152.7 | 58,660 | 31,750 |
| PACIFIC | 253.7 | 278.3 | 281.0 | 93,340 | 80,010 |
| TOTAL | 3,349.9 | 3,426.7 | 3,440.0 | 820,000 | 1,300,000 |

[1]Includes engines used for stationary work such as irrigation, auxilliary engines on combines, balers, etc., and a small number of power units not elsewhere classified.

## NOTEBOOK (from pg. 5)

the government insist that a farmer sign a statement to the effect that all the tractors he's using have ROPS if he wants his government check? Skromme said that he got nowhere with this suggestion when it was offered to the government. He was told, he said, that the Farm Bureau resists the idea of any such government interference with the farmer's independence.

If Skromme moved some of the lawyers present toward a shift of mind about engineers, the next speaker was clearly unimpressed. Attorney Habush said:

"Many of the injuries and deaths are preventable by exercise of common sense by manufacturers. Improvements have been too little and too late, and these engineers *(gesturing to the engineer panelists beside him)* are the proof.

"Farmers are the most non-litigious people I've ever met. It has been said that farmers don't want regulation. Maybe they don't want inspectors on their farms, but they do want safety. They do want inspection and thought in engineering departments and the offices of chief executives. The claim that 'the government didn't make us' (apply various safety devices) is a bit disingenuous. The law requires manufacturers to act prudently, to design out hazards that can be designed out and warn of those that can't.

"I suggest to farm equipment manufacturers that the age (of equipment operators), the night work, the other hazards — all these can be perceived. They're all foreseeable and can be considered in the design of a machine. They know that kids and illiterates use their machines and that there's no OSHA inspector. They've know all this for decades, but hazards are not shielded like machines in factories. There are no programs of recall and few retrofits....

"My bias is obvious. My cynicism is apparent. The most neglected area of safety improvement has been farms, and the recent attention to safer design has been caused by the greatest regulator, the American jury."

Whew! Then keynoter Jim Hightower arrived late, toting, I kid you not, a white cowboy hat. He said:

"We're beginning to build an alli-

(MORE, page 10)

# Principal Machines on Farms — 1988

| STATE | WHEEL TRACTORS | | | SELF-PROPELLED COMBINES | | | CORN HEADS | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1978 Census Number | 1982 Census Number | Estimated July 1, 1988 Number | 1978 Census Number | 1982 Census Number | Estimated July 1, 1988 Number | 1978 Census Number | 1982 Census Number | Estimate July 1, 1988 Number |
| Maine | 13,741 | 13,569 | 13,265 | 388 | 320 | 268 | 183 | 181 | 170 |
| New Hampshire | 4,877 | 5,097 | 5,140 | 14 | 8 | 4 | 64 | 50 | 40 |
| Vermont | 14,637 | 15,274 | 15,360 | 156 | 76 | 60 | 346 | 374 | 365 |
| Massachusetts | 9,840 | 9,956 | 9,860 | 26 | 23 | 19 | 113 | 145 | 145 |
| Rhode Island | 1,462 | 1,364 | 1,280 | 13 | 6 | 4 | 17 | 13 | 10 |
| Connecticut | 7,865 | 8,421 | 8,560 | 86 | 53 | 40 | 157 | 98 | 70 |
| New York | 120,215 | 119,498 | 117,475 | 5,775 | 6,030 | 6,035 | 3,401 | 3,904 | 3,975 |
| New Jersey | 20,655 | 20,554 | 20,220 | 1,086 | 1,011 | 935 | 532 | 593 | 585 |
| Pennsylvania | 137,998 | 136,505 | 133,830 | 9,674 | 9,707 | 9,530 | 4,409 | 5,408 | 5,645 |
| Delaware | 8,348 | 8,012 | 7,840 | 1,314 | 1,342 | 1,335 | 1,003 | 1,006 | 960 |
| Maryland | 36,251 | 36,951 | 36,760 | 3,518 | 3,279 | 3,090 | 2,732 | 2,840 | 2,770 |
| NORTHEAST | 375,889 | 375,201 | 369,590 | 22,050 | 21,855 | 21,320 | 12,957 | 14,612 | 14,735 |
| Ohio | 198,865 | 193,367 | 187,795 | 33,449 | 33,200 | 32,440 | 24,438 | 26,403 | 26,265 |
| Indiana | 176,767 | 167,563 | 160,325 | 37,403 | 34,646 | 32,595 | 32,638 | 31,391 | 29,620 |
| Illinois | 277,604 | 262,112 | 254,000 | 63,230 | 61,411 | 59,440 | 55,793 | 55,636 | 53,250 |
| Iowa | 323,132 | 305,334 | 294,440 | 55,586 | 57,726 | 58,155 | 53,030 | 57,046 | 56,650 |
| Missouri | 198,225 | 193,758 | 189,560 | 33,378 | 32,957 | 32,110 | 23,056 | 21,834 | 20,290 |
| CORN BELT | 1,174,593 | 1,122,134 | 1,086,120 | 223,045 | 219,940 | 214,740 | 188,955 | 192,310 | 186,075 |
| Michigan | 148,063 | 146,655 | 144,390 | 18,919 | 21,060 | 21,405 | 11,076 | 13,583 | 14,375 |
| Wisconsin | 252,594 | 243,827 | 236,890 | 18,262 | 19,215 | 19,335 | 8,458 | 11,939 | 13,330 |
| Minnesota | 277,920 | 264,581 | 255,380 | 44,841 | 45,847 | 45,645 | 27,197 | 31,098 | 31,845 |
| LAKE STATES | 678,577 | 655,063 | 636,660 | 82,022 | 86,122 | 86,385 | 46,731 | 56,620 | 59,550 |
| North Dakota | 120,191 | 108,103 | 102,590 | 30,782 | 27,546 | 26,005 | 1,619 | 2,708 | 3,070 |
| South Dakota | 111,485 | 105,699 | 100,260 | 16,503 | 16,961 | 16,885 | 7,759 | 9,606 | 10,355 |
| Nebraska | 175,569 | 164,308 | 158,625 | 35,083 | 34,032 | 32,900 | 24,623 | 25,484 | 25,355 |
| Kansas | 157,327 | 149,870 | 144,870 | 47,142 | 46,662 | 45,560 | 9,150 | 8,321 | 7,295 |
| GREAT PLAINS | 564,572 | 527,980 | 506,345 | 129,510 | 125,207 | 121,350 | 43,151 | 48,119 | 46,075 |
| West Virginia | 24,901 | 27,110 | 27,680 | 479 | 562 | 610 | 265 | 471 | 495 |
| Kentucky | 157,432 | 163,176 | 162,800 | 10,568 | 11,466 | 11,755 | 8,382 | 9,924 | 10,295 |
| Tennessee | 120,161 | 126,365 | 128,675 | 10,765 | 11,227 | 11,265 | 5,581 | 6,508 | 6,715 |
| Virginia | 83,836 | 88,511 | 88,790 | 5,878 | 6,224 | 6,275 | 4,255 | 5,061 | 5,170 |
| North Carolina | 145,863 | 131,488 | 125,400 | 13,297 | 13,820 | 12,250 | 10,326 | 10,618 | 10,285 |
| APPALACHIAN | 532,193 | 536,650 | 533,345 | 40,987 | 42,299 | 42,155 | 28,809 | 32,582 | 32,960 |
| South Carolina | 47,967 | 44,338 | 41,460 | 6,420 | 6,263 | 6,025 | 3,854 | 3,808 | 3,635 |
| Georgia | 79,031 | 75,505 | 72,520 | 9,589 | 8,980 | 8,535 | 7,302 | 6,438 | 5,755 |
| Florida | 51,099 | 52,346 | 52,185 | 1,726 | 1,742 | 1,700 | 1,112 | 1,307 | 1,335 |
| Alabama | 69,438 | 66,330 | 63,590 | 6,660 | 6,935 | 6,965 | 3,383 | 3,630 | 3,590 |
| SOUTHEAST | 247,535 | 238,519 | 229,555 | 24,395 | 23,920 | 23,225 | 15,651 | 15,183 | 14,315 |
| Mississippi | 72,483 | 70,139 | 68,365 | 9,911 | 9,695 | 9,415 | 527 | 861 | 975 |
| Louisiana | 58,373 | 56,883 | 55,425 | 9,624 | 8,468 | 7,710 | 377 | 286 | 230 |
| Arkansas | 84,108 | 81,556 | 79,265 | 13,960 | 12,891 | 12,100 | 292 | 221 | 180 |
| DELTA STATES | 214,964 | 208,578 | 203,055 | 33,495 | 31,054 | 29,225 | 1,196 | 1,368 | 1,385 |
| Oklahoma | 99,771 | 99,934 | 98,715 | 17,647 | 17,299 | 16,785 | 822 | 600 | 475 |
| Texas | 262,886 | 264,740 | 262,805 | 23,026 | 21,049 | 19,535 | 3,628 | 3,913 | 3,890 |
| SOUTHERN PLAINS | 362,657 | 364,674 | 361,520 | 40,673 | 38,348 | 36,320 | 4,450 | 4,513 | 4,365 |
| Montana | 54,737 | 54,666 | 53,840 | 13,180 | 12,038 | 11,095 | 101 | 89 | 70 |
| Idaho | 53,552 | 50,575 | 48,510 | 9,843 | 9,309 | 8,835 | 414 | 344 | 315 |
| Wyoming | 19,322 | 20,673 | 20,985 | 1,999 | 1,991 | 1,945 | 171 | 221 | 235 |
| Colorado | 58,331 | 56,141 | 54,515 | 8,404 | 7,994 | 7,660 | 2,397 | 2,618 | 2,590 |
| New Mexico | 16,601 | 17,455 | 17,500 | 1,513 | 1,346 | 1,215 | 246 | 308 | 325 |
| Arizona | 11,956 | 12,262 | 12,205 | 509 | 369 | 280 | 60 | 94 | 90 |
| Utah | 21,145 | 21,613 | 21,475 | 1,743 | 1,591 | 1,455 | 186 | 225 | 230 |
| Nevada | 5,142 | 5,160 | 5,100 | 263 | 234 | 190 | 3 | 19 | 20 |
| MOUNTAIN STATES | 240,786 | 238,545 | 234,130 | 37,454 | 34,872 | 32,665 | 3,578 | 3,918 | 3,875 |
| Washington | 53,301 | 59,377 | 61,330 | 8,431 | 8,314 | 8,090 | 470 | 558 | 575 |
| Oregon | 48,158 | 53,243 | 55,030 | 6,335 | 6,235 | 6,055 | * | 209 | 205 |
| California | 129,480 | 139,735 | 144,055 | 6,270 | 6,102 | 5,885 | 1,016 | 1,123 | 1,120 |
| PACIFIC | 230,939 | 252,355 | 260,415 | 21,036 | 20,651 | 20,030 | 1,486 | 1,890 | 1,900 |
| TOTAL | 4,622,705 | 4,519,699 | 4,420,735 | 654,667 | 644,262 | 627,415 | 346,964 | 369,115 | 365,235 |

*Not reported separately

# Principal Machines on Farms — 1988

| STATE | POWER ELEVATORS Estimated July 1, 1988 Number | MANURE SPREADERS Estimated July 1, 1988 Number | CORN & COTTON PLANTERS Estimated July 1, 1988 Number | GRAIN DRILLS Estimated July 1, 1988 Number | MOLDBOARD PLOWS Estimated July 1, 1988 Number | SIDE DELIVERY RAKES Estimated July 1, 1988 Number | POWER TRACTOR MOWERS* Estimated July 1, 1988 Number |
|---|---|---|---|---|---|---|---|
| Maine | 4,835 | 2,830 | 285 | 770 | 7,680 | 5,290 | 6,010 |
| New Hampshire | 2,280 | 1,810 | 255 | 50 | 2,625 | 2,240 | 2,745 |
| Vermont | 7,355 | 5,705 | 1,440 | 285 | 8,875 | 6,680 | 8,160 |
| Massachusetts | 3,300 | 2,060 | 790 | 100 | 5,310 | 3,180 | 3,600 |
| Rhode Island | 460 | 245 | 95 | 25 | 615 | 290 | 290 |
| Connecticut | 3,840 | 2,215 | 925 | 75 | 5,040 | 2,250 | 3,160 |
| New York | 63,995 | 36,450 | 17,720 | 24,290 | 70,270 | 43,345 | 50,220 |
| New Jersey | 5,635 | 2,180 | 2,165 | 2,225 | 14,640 | 3,630 | 4,150 |
| Pennsylvania | 68,175 | 37,710 | 30,530 | 36,455 | 89,260 | 44,700 | 55,860 |
| Delaware | 3,620 | 1,595 | 1,910 | 1,840 | 5,630 | 950 | 960 |
| Maryland | 15,035 | 7,595 | 7,790 | 8,035 | 25,250 | 8,130 | 10,310 |
| NORTHEAST | 178,530 | 100,395 | 63,905 | 74,150 | 235,195 | 120,685 | 145,285 |
| Ohio | 117,200 | 50,995 | 57,795 | 58,070 | 143,480 | 50,870 | 58,870 |
| Indiana | 116,325 | 45,095 | 59,265 | 47,305 | 122,530 | 37,540 | 46,030 |
| Illinois | 177,110 | 65,960 | 86,700 | 59,650 | 158,945 | 48,715 | 64,820 |
| Iowa | 187,050 | 90,020 | 96,410 | 55,335 | 189,380 | 82,340 | 97,810 |
| Missouri | 82,925 | 50,605 | 46,185 | 48,090 | 133,495 | 48,620 | 79,030 |
| CORN BELT | 680,610 | 302,675 | 346,355 | 268,450 | 747,830 | 268,085 | 346,560 |
| Michigan | 83,125 | 33,270 | 35,050 | 46,715 | 115,680 | 39,895 | 43,695 |
| Wisconsin | 131,130 | 76,395 | 61,800 | 59,550 | 148,180 | 83,415 | 94,500 |
| Minnesota | 146,870 | 69,110 | 74,395 | 69,050 | 159,825 | 80,670 | 87,960 |
| LAKE STATES | 361,125 | 178,775 | 171,245 | 175,315 | 423,685 | 203,980 | 226,155 |
| North Dakota | 71,175 | 18,805 | 13,865 | 54,650 | 58,620 | 21,040 | 37,175 |
| South Dakota | 63,210 | 26,275 | 28,055 | 30,950 | 58,820 | 21,420 | 43,410 |
| Nebraska | 97,950 | 40,260 | 41,895 | 39,665 | 83,485 | 32,540 | 50,215 |
| Kansas | 104,500 | 33,570 | 20,310 | 64,445 | 84,755 | 33,420 | 49,730 |
| GREAT PLAINS | 336,835 | 118,910 | 104,125 | 189,710 | 285,680 | 108,420 | 180,530 |
| West Virginia | 6,300 | 7,610 | 4,830 | 3,380 | 17,470 | 8,920 | 17,130 |
| Kentucky | 24,330 | 25,095 | 35,540 | 10,430 | 99,240 | 28,910 | 46,130 |
| Tennessee | 15,000 | 18,310 | 48,035 | 13,025 | 64,400 | 23,040 | 49,440 |
| Virginia | 18,530 | 19,585 | 23,920 | 15,715 | 59,800 | 21,960 | 30,170 |
| North Carolina | 20,300 | 19,175 | 67,465 | 21,060 | 57,450 | 15,000 | 30,660 |
| APPALACHIAN | 84,460 | 89,775 | 179,790 | 63,610 | 298,360 | 97,830 | 173,530 |
| South Carolina | 4,605 | 3,540 | 28,265 | 10,870 | 9,985 | 5,540 | 9,435 |
| Georgia | 13,775 | 6,000 | 35,930 | 9,375 | 28,385 | 9,980 | 15,720 |
| Florida | 3,650 | 1,080 | 5,510 | 1,625 | 18,400 | 1,810 | 3,590 |
| Alabama | 11,300 | 4,005 | 39,150 | 6,590 | 21,235 | 7,155 | 15,380 |
| SOUTHEAST | 33,330 | 14,625 | 108,855 | 28,460 | 78,005 | 24,485 | 44,125 |
| Mississippi | 7,730 | 4,570 | 48,620 | 7,755 | 26,820 | 9,180 | 20,345 |
| Louisiana | 2,525 | 2,635 | 16,400 | 6,940 | 20,065 | 5,930 | 10,265 |
| Arkansas | 9,435 | 6,430 | 20,210 | 12,385 | 44,340 | 9,900 | 19,660 |
| DELTA STATES | 19,690 | 13,635 | 85,230 | 27,080 | 91,225 | 25,010 | 50,270 |
| Oklahoma | 25,200 | 8,350 | 8,545 | 30,265 | 74,185 | 18,820 | 30,755 |
| Texas | 40,110 | 15,845 | 51,355 | 47,405 | 84,850 | 21,860 | 44,670 |
| SOUTHERN PLAINS | 65,310 | 24,195 | 59,900 | 77,670 | 159,035 | 40,680 | 75,425 |
| Montana | 28,030 | 9,840 | 1,015 | 20,470 | 26,355 | 13,230 | 20,350 |
| Idaho | 24,470 | 12,275 | 2,475 | 14,885 | 32,005 | 15,490 | 20,245 |
| Wyoming | 5,030 | 4,210 | 885 | 3,965 | 15,025 | 4,990 | 5,820 |
| Colorado | 25,200 | 12,525 | 5,780 | 14,790 | 25,160 | 13,620 | 14,930 |
| New Mexico | 2,575 | 2,040 | 2,940 | 1,870 | 8,415 | 4,020 | 4,470 |
| Arizona | 1,800 | 865 | 1,765 | 1,365 | 3,225 | 1,350 | 1,925 |
| Utah | 10,060 | 6,790 | 1,580 | 5,275 | 14,535 | 8,950 | 10,265 |
| Nevada | 940 | 995 | 60 | 305 | 2,445 | 1,430 | 1,480 |
| MOUNTAIN STATES | 98,105 | 49,540 | 16,500 | 62,925 | 127,165 | 63,080 | 79,485 |
| Washington | 21,750 | 12,945 | 1,705 | 16,550 | 35,535 | 13,040 | 19,660 |
| Oregon | 17,530 | 11,425 | 1,055 | 11,390 | 34,540 | 11,470 | 18,495 |
| California | 24,220 | 13,440 | 8,560 | 8,565 | 57,740 | 13,230 | 22,385 |
| PACIFIC | 63,500 | 37,810 | 11,320 | 36,505 | 127,815 | 37,740 | 60,540 |
| TOTAL | 1,921,495 | 930,335 | 1,147,225 | 1,003,875 | 2,573,995 | 989,995 | 1,381,905 |

*Cutter bar type only.

# Principal Machines on Farms — 1988

| STATE | PICK-UP BALERS | | | FIELD FORAGE HARVESTERS[1] | | | MOWER CONDITIONERS[2] | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1978 Census Number | 1982 Census Number | Estimated July 1, 1988 Number | 1978 Census Number | 1982 Census Number | Estimated July 1, 1988 Number | 1978 Census Number | 1982 Census Number | Estimated July 1, 1988 Number |
| Maine | 2,609 | 3,047 | 3,140 | 1,309 | 1,181 | 1,085 | 2,023 | 2,353 | 2,535 |
| New Hampshire | 1,254 | 1,259 | 1,210 | 545 | 544 | 515 | 889 | 960 | 1,005 |
| Vermont | 4,082 | 4,167 | 4,065 | 2,707 | 2,569 | 2,365 | 3,777 | 3,866 | 3,900 |
| Massachusetts | 1,732 | 1,704 | 1,525 | 1,092 | 1,083 | 1,035 | 1,472 | 1,533 | 1,565 |
| Rhode Island | 181 | 205 | 200 | 113 | 93 | 75 | 124 | 146 | 155 |
| Connecticut | 1,509 | 1,508 | 1,455 | 804 | 773 | 720 | 1,063 | 1,318 | 1,475 |
| New York | 28,853 | 28,078 | 26,690 | 20,298 | 19,040 | 17,650 | 25,390 | 25,603 | 25,620 |
| New Jersey | 2,194 | 2,260 | 2,220 | 1,093 | 1,165 | 1,150 | 2,275 | 2,386 | 2,435 |
| Pennsylvania | 37,288 | 37,257 | 35,925 | 18,891 | 18,078 | 16,790 | 29,419 | 29,456 | 29,400 |
| Delaware | 568 | 531 | 495 | 269 | 249 | 220 | 587 | 519 | 475 |
| Maryland | 5,581 | 5,719 | 5,580 | 2,852 | 2,670 | 2,490 | 4,653 | 5,136 | 5,365 |
| NORTHEAST | 85,851 | 85,735 | 82,505 | 49,973 | 47,465 | 44,095 | 71,672 | 73,276 | 73,930 |
| Ohio | 38,496 | 39,754 | 38,960 | 11,209 | 11,090 | 10,595 | 26,997 | 26,143 | 25,760 |
| Indiana | 23,838 | 23,947 | 23,210 | 6,912 | 6,917 | 6,635 | 15,733 | 15,583 | 15,485 |
| Illinois | 30,632 | 30,463 | 29,340 | 11,557 | 9,972 | 8,825 | 21,173 | 21,867 | 22,265 |
| Iowa | 47,389 | 47,776 | 46,610 | 19,393 | 17,638 | 16,115 | 26,375 | 28,401 | 29,595 |
| Missouri | 43,981 | 48,662 | 48,875 | 8,704 | 8,055 | 7,380 | 23,469 | 26,527 | 28,150 |
| CORN BELT | 184,336 | 190,602 | 186,995 | 57,775 | 53,672 | 49,550 | 113,747 | 118,521 | 121,255 |
| Michigan | 24,536 | 25,051 | 24,530 | 12,704 | 11,809 | 10,840 | 20,696 | 21,055 | 21,325 |
| Wisconsin | 58,443 | 58,042 | 56,135 | 43,154 | 43,880 | 42,540 | 51,830 | 51,630 | 51,495 |
| Minnesota | 50,165 | 51,038 | 49,855 | 23,341 | 23,803 | 23,050 | 31,714 | 32,050 | 32,290 |
| LAKE STATES | 133,144 | 134,131 | 130,520 | 79,199 | 79,492 | 76,430 | 104,240 | 104,735 | 105,110 |
| North Dakota | 15,180 | 16,628 | 16,750 | 5,538 | 4,839 | 4,415 | 6,315 | 6,181 | 6,065 |
| South Dakota | 14,174 | 17,966 | 19,195 | 11,280 | 10,568 | 9,785 | 5,673 | 6,958 | 7,120 |
| Nebraska | 16,968 | 18,906 | 19,390 | 13,870 | 12,538 | 11,415 | 14,740 | 15,497 | 15,920 |
| Kansas | 29,222 | 31,998 | 32,405 | 10,778 | 9,367 | 8,305 | 17,144 | 18,932 | 19,710 |
| GREAT PLAINS | 75,544 | 85,498 | 87,740 | 41,466 | 37,312 | 33,920 | 43,872 | 47,568 | 48,815 |
| West Virginia | 9,119 | 10,550 | 10,920 | 2,094 | 2,323 | 2,320 | 5,035 | 6,033 | 6,515 |
| Kentucky | 31,575 | 35,143 | 36,015 | 7,752 | 7,910 | 7,680 | 23,656 | 23,800 | 24,015 |
| Tennessee | 22,028 | 26,506 | 27,910 | 5,202 | 6,313 | 6,615 | 16,834 | 18,734 | 19,510 |
| Virginia | 17,932 | 21,805 | 22,625 | 6,075 | 6,209 | 5,995 | 12,404 | 14,659 | 15,920 |
| North Carolina | 12,461 | 12,752 | 12,290 | 4,204 | 3,502 | 2,970 | 10,577 | 10,888 | 10,945 |
| APPALACHIAN | 93,115 | 106,756 | 109,760 | 25,327 | 26,257 | 25,580 | 68,506 | 74,119 | 76,905 |
| South Carolina | 4,404 | 4,823 | 4,750 | 1,369 | 1,260 | 1,150 | 3,370 | 4,033 | 4,365 |
| Georgia | 8,671 | 10,407 | 10,870 | 2,652 | 2,717 | 2,635 | 9,176 | 9,465 | 9,550 |
| Florida | 2,787 | 3,754 | 4,095 | 903 | 861 | 805 | 6,406 | 7,591 | 8,260 |
| Alabama | 10,068 | 11,322 | 11,485 | 2,102 | 2,112 | 2,030 | 8,349 | 8,212 | 8,110 |
| SOUTHEAST | 25,930 | 30,306 | 31,200 | 7,026 | 6,950 | 6,620 | 27,301 | 29,301 | 30,285 |
| Mississippi | 8,286 | 10,509 | 11,235 | 2,003 | 1,927 | 1,820 | 7,294 | 7,949 | 8,270 |
| Louisiana | 5,666 | 6,425 | 6,580 | 1,299 | 1,327 | 1,280 | 6,587 | 6,698 | 6,740 |
| Arkansas | 10,783 | 13,994 | 15,215 | 1,882 | 1,634 | 1,435 | 8,366 | 10,035 | 10,905 |
| DELTA STATES | 24,735 | 30,928 | 33,030 | 5,184 | 4,888 | 4,535 | 22,247 | 24,682 | 25,915 |
| Oklahoma | 19,242 | 22,690 | 23,650 | 2,420 | 2,491 | 2,430 | 14,990 | 17,107 | 18,305 |
| Texas | 26,382 | 33,736 | 35,355 | 5,339 | 5,109 | 4,775 | 32,449 | 39,629 | 37,235 |
| SOUTHERN PLAINS | 45,624 | 56,426 | 59,005 | 7,759 | 7,600 | 7,205 | 47,439 | 56,736 | 55,540 |
| Montana | 11,692 | 12,468 | 12,465 | 2,086 | 2,429 | 2,490 | 7,304 | 8,102 | 8,450 |
| Idaho | 12,862 | 12,210 | 11,510 | 2,391 | 2,384 | 2,285 | 9,029 | 8,515 | 8,220 |
| Wyoming | 4,468 | 5,060 | 5,220 | 1,261 | 1,222 | 1,150 | 3,433 | 3,904 | 4,140 |
| Colorado | 10,374 | 10,365 | 9,990 | 4,355 | 3,503 | 2,975 | 7,259 | 7,040 | 6,920 |
| New Mexico | 3,252 | 3,403 | 3,380 | 774 | 802 | 785 | 2,317 | 2,395 | 2,440 |
| Arizona | 1,004 | 6,942 | 1,020 | 298 | 348 | 350 | 780 | 861 | 900 |
| Utah | 6,922 | 6,965 | 6,750 | 1,874 | 1,978 | 1,950 | 5,098 | 5,547 | 5,770 |
| Nevada | 1,470 | 1,598 | 1,595 | 353 | 437 | 460 | 1,245 | 1,314 | 1,355 |
| MOUNTAIN STATES | 52,044 | 53,117 | 51,930 | 13,392 | 13,103 | 12,445 | 36,465 | 37,678 | 38,195 |
| Washington | 8,717 | 9,518 | 9,555 | 2,890 | 3,060 | 3,020 | 8,107 | 9,838 | 10,745 |
| Oregon | 8,443 | 9,730 | 10,050 | 2,602 | 2,555 | 2,430 | 7,033 | 8,528 | 9,290 |
| California | 6,358 | 6,725 | 6,730 | 2,530 | 2,715 | 2,705 | 7,558 | 9,299 | 10,255 |
| PACIFIC | 23,518 | 25,973 | 26,335 | 8,022 | 8,330 | 8,155 | 22,698 | 27,665 | 30,290 |
| TOTAL | 743,841 | 799,472 | 799,020 | 295,123 | 285,069 | 268,535 | 558,187 | 594,281 | 606,240 |

[1]Shear-bar type. [2]Does not include windrowers with conditioning rolls.

## Farm Wheel Tractor Retail Sales By State, 1984-1987

(In Units)

| State | 1984 2-wheel Drive | 1984 4-wheel Drive | 1984 Total Tractors | 1985 2-wheel Drive | 1985 4-wheel Drive | 1985 Total Tractors | 1986 2-wheel Drive | 1986 4-wheel Drive | 1986 Total Tractors | 1987 2-wheel Drive | 1987 4-wheel Drive | 1987 Total Tractors |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | 2,653 | 10 | 2,663 | 2,872 | 2 | 2,874 | 3,041 | — | 3,041 | 2,943 | 1 | 2,944 |
| Alaska | 71 | — | 71 | 39 | — | 39 | 22 | — | 22 | 20 | — | 20 |
| Arizona | 782 | 30 | 812 | 1,240 | 29 | 1,269 | 657 | 16 | 673 | 638 | 2 | 640 |
| Arkansas | 3,714 | 91 | 3,805 | 3,683 | 70 | 3,753 | 3,154 | 55 | 3,209 | 3,083 | 31 | 3,114 |
| California | 5,946 | 186 | 6,132 | 4,931 | 74 | 5,005 | 5,138 | 73 | 5,211 | 4,970 | 49 | 5,019 |
| Colorado | 1,234 | 106 | 1,340 | 983 | 89 | 1,072 | 711 | 50 | 761 | 682 | 59 | 741 |
| Connecticut | 618 | 3 | 621 | 715 | 1 | 716 | 937 | — | 937 | 1,091 | 1 | 1,092 |
| Delaware | 248 | 7 | 255 | 286 | 7 | 293 | 351 | 6 | 357 | 320 | 4 | 324 |
| Florida | 4,614 | 19 | 4,633 | 4,543 | 30 | 4,573 | 4,732 | 31 | 4,763 | 4,375 | 55 | 4,430 |
| Georgia | 4,635 | 10 | 4,665 | 5,242 | 5 | 5,247 | 5,077 | 6 | 5,083 | 5,173 | 3 | 5,176 |
| Hawaii | 116 | 5 | 121 | 126 | 9 | 135 | 142 | 4 | 146 | 149 | 4 | 153 |
| Idaho | 1,062 | 117 | 1,179 | 786 | 83 | 869 | 483 | 35 | 518 | 497 | 17 | 514 |
| Illinois | 3,958 | 312 | 4,270 | 3,327 | 252 | 3,579 | 3,182 | 155 | 3,337 | 3,204 | 116 | 3,320 |
| Indiana | 2,801 | 135 | 2,936 | 2,789 | 113 | 2,902 | 2,784 | 68 | 2,852 | 2,712 | 46 | 2,758 |
| Iowa | 2,964 | 129 | 3,093 | 1,894 | 68 | 1,962 | 2,022 | 69 | 2,091 | 2,433 | 64 | 2,497 |
| Kansas | 2,199 | 342 | 2,541 | 1,739 | 248 | 1,987 | 1,585 | 134 | 1,719 | 1,591 | 132 | 1,723 |
| Kentucky | 2,945 | 15 | 2,960 | 3,044 | 23 | 3,067 | 2,643 | 11 | 2,654 | 2,519 | 8 | 2,527 |
| Louisiana | 3,894 | 48 | 3,942 | 3,419 | 66 | 3,485 | 2,602 | 15 | 2,617 | 2,430 | 23 | 2,453 |
| Maine | 615 | — | 615 | 625 | — | 625 | 806 | — | 806 | 824 | — | 824 |
| Maryland | 1,683 | 7 | 1,690 | 2,139 | 3 | 2,142 | 2,081 | 1 | 2,082 | 2,279 | 2 | 2,281 |
| Massachusetts | 621 | — | 621 | 783 | — | 783 | 999 | — | 999 | 1,188 | — | 1,188 |
| Michigan | 2,751 | 132 | 2,883 | 2,975 | 74 | 3,049 | 3,051 | 51 | 3,102 | 2,624 | 34 | 2,658 |
| Minnesota | 2,441 | 295 | 2,736 | 1,714 | 202 | 1,916 | 1,651 | 183 | 1,834 | 1,816 | 153 | 1,969 |
| Mississippi | 3,030 | 25 | 3,055 | 3,172 | 20 | 3,192 | 2,516 | 7 | 2,523 | 2,317 | 16 | 2,333 |
| Missouri | 3,036 | 75 | 3,111 | 3,159 | 35 | 3,194 | 3,290 | 38 | 3,328 | 3,266 | 43 | 3,309 |
| Montana | 677 | 195 | 872 | 602 | 122 | 724 | 323 | 103 | 476 | 340 | 76 | 416 |
| Nebraska | 1,598 | 99 | 1,697 | 963 | 63 | 1,026 | 1,258 | 66 | 1,324 | 1,314 | 64 | 1,378 |
| Nevada | 82 | 6 | 88 | 113 | 4 | 117 | 102 | 2 | 104 | 99 | 1 | 100 |
| New Hampshire | 712 | 1 | 713 | 946 | — | 946 | 1,139 | — | 1,139 | 1,293 | — | 1,293 |
| New Jersey | 1,039 | 1 | 1,040 | 1,062 | 1 | 1,063 | 1,275 | — | 1,275 | 1,337 | — | 1,337 |
| New Mexico | 371 | 19 | 390 | 529 | 18 | 547 | 418 | 9 | 427 | 444 | 5 | 449 |
| New York | 3,296 | 45 | 3,341 | 3,717 | 21 | 3,738 | 4,065 | 24 | 4,089 | 4,074 | 6 | 4,080 |
| North Carolina | 4,571 | 12 | 4,583 | 4,478 | 9 | 4,487 | 4,511 | 7 | 4,518 | 5,334 | 3 | 5,337 |
| North Dakota | 1,112 | 457 | 1,569 | 917 | 351 | 1,268 | 892 | 292 | 1,184 | 1,092 | 223 | 1,315 |
| Ohio | 3,887 | 108 | 3,995 | 4,537 | 56 | 4,593 | 4,364 | 67 | 4,431 | 4,276 | 25 | 4,301 |
| Oklahoma | 2,364 | 213 | 2,577 | 2,203 | 167 | 2,370 | 1,899 | 82 | 1,981 | 1,857 | 81 | 1,938 |
| Oregon | 1,705 | 41 | 1,746 | 1,606 | 36 | 1,642 | 1,699 | 24 | 1,723 | 1,579 | 11 | 1,590 |
| Pennsylvania | 3,717 | 21 | 3,738 | 4,095 | 16 | 4,111 | 4,524 | 15 | 4,539 | 4,640 | 9 | 4,649 |
| Rhode Island | 85 | — | 85 | 97 | — | 97 | 117 | — | 117 | 119 | — | 119 |
| South Carolina | 1,904 | 2 | 1,906 | 2,171 | 5 | 2,176 | 2,033 | 1 | 2,034 | 2,127 | 2 | 2,129 |
| South Dakota | 1,060 | 169 | 1,229 | 809 | 158 | 967 | 934 | 149 | 1,083 | 1,130 | 118 | 1,248 |
| Tennessee | 3,936 | 15 | 3,951 | 4,522 | 16 | 4,538 | 4,207 | 13 | 4,220 | 4,472 | 6 | 4,478 |
| Texas | 12,338 | 226 | 12,564 | 13,252 | 192 | 13,444 | 9,849 | 77 | 9,926 | 8,183 | 95 | 8,278 |
| Utah | 688 | 15 | 703 | 625 | 6 | 631 | 480 | 4 | 484 | 308 | 1 | 309 |
| Vermont | 509 | 5 | 514 | 600 | 2 | 602 | 625 | — | 625 | 639 | — | 639 |
| Virginia | 2,736 | 5 | 2,741 | 3,253 | 5 | 3,258 | 3,309 | 6 | 3,315 | 3,704 | 1 | 3,705 |
| Washington | 1,956 | 105 | 2,061 | 1,652 | 83 | 1,735 | 1,450 | 39 | 1,489 | 1,433 | 30 | 1,463 |
| West Virginia | 525 | 1 | 526 | 685 | — | 685 | 925 | 1 | 926 | 850 | — | 850 |
| Wisconsin | 2,821 | 82 | 2,903 | 2,615 | 60 | 2,675 | 2,225 | 41 | 2,266 | 1,900 | 23 | 1,923 |
| Wyoming | 302 | 26 | 328 | 168 | 18 | 186 | 149 | 7 | 156 | 131 | 8 | 139 |
| U.S. Govt. | 530 | — | 530 | 13 | — | 13 | 29 | — | 29 | 183 | 2 | 185 |
| Miscellaneous | 590 | 3 | 593 | 306 | — | 306 | 250 | — | 250 | 529 | — | 529 |
| TOTAL | 113,759 | 3,975 | 117,734 | 112,761 | 2,912 | 115,673 | 106,758 | 2,037 | 108,795 | 106,531 | 1,653 | 108,184 |

Source: Farm & Industrial Equipment Institute. Figures do not include garden tractors, motor bikes or contractors' off-highway types.

## NOTEBOOK (from pg. 9)

ance between the farmer and his friend, the trial lawyer — his only friend. OSHA can't do anything but grant exemptions. USDA makes no effort. CPSC has no jurisdiction and the National Safety Council has only one person. So the farmer's only friend is access to tort law. We have to take common sense to high places. Farm safety is a political issue, and we have to amass our strength to push a sensible farm safety policy."

And when he closed with, "We need to protect and extend tort laws," he got applause and cheers.

Some quotes from the question-answer session:

**Libbra:** "I keep hearing that 'the farmer doesn't want safety.' But the Illinois Farm Bureau doesn't represent me. It's a big insurance company. They own part of Archer Daniels Midland."

**Floor comment:** "This has been a low-level program for the problem."

**Harry Philo,** trial attorney, from the audience: "Ag engineers don't know a damned thing about safety engineering. They don't know and they don't care. The standards are pathetic on warnings. Deere's warnings in 1966 were better than ASAE's are now. Some ag engineers have

## Retail Sales of Selected Farm Equipment — Jan.-Dec., 1986 and 1987[1]

(In Units)

| STATE | COMBINES SELF-PROPELLED | | CORN HEADS | | HAY BALERS[2] | | WINDROWERS SELF-PROPELLED POWER UNITS | | WINDROWERS SELF-PROPELLED TOTAL HEADS | | GRINDER-MIXERS | | SHEAR-BAR FORAGE HARVESTERS[3] | | MOWER CONDITIONERS ALL-TYPES | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1986 | 1987 | 1986 | 1987 | 1986 | 1987 | 1986 | 1987 | 1986 | 1987 | 1986 | 1987 | 1986 | 1987 | 1986 | 1987 |
| Alabama | 14 | 10 | 7 | 7 | 78 | 89 | 2 | — | 2 | — | 28 | 28 | 6 | 9 | 108 | 80 |
| Alaska | 1 | — | — | — | — | 2 | — | — | — | — | — | 1 | — | — | — | 3 |
| Arizona | 13 | 4 | 1 | 5 | 22 | 23 | 30 | 32 | 35 | 33 | 2 | — | 4 | 5 | 4 | 2 |
| Arkansas | 184 | 244 | 8 | 3 | 110 | 68 | 2 | — | 2 | — | 10 | 5 | — | 4 | 222 | 140 |
| California | 60 | 41 | 21 | 3 | 85 | 65 | 153 | 128 | 166 | 142 | 1 | 2 | 52 | 34 | 54 | 29 |
| Colorado | 90 | 81 | 43 | 30 | 141 | 138 | 61 | 57 | 70 | 62 | 9 | 11 | 12 | 5 | 80 | 84 |
| Connecticut | — | — | — | — | 27 | 19 | — | — | — | — | — | 1 | 17 | 17 | 57 | 53 |
| Delaware | 7 | 8 | 13 | 7 | 6 | 16 | — | — | — | — | — | 2 | 3 | 3 | 11 | 16 |
| Florida | 5 | 3 | 2 | 4 | 62 | 42 | — | 1 | — | 1 | 3 | 3 | 6 | 6 | 54 | 25 |
| Georgia | 33 | 47 | 33 | 18 | 100 | 135 | — | — | 1 | — | 29 | 26 | 7 | 19 | 103 | 98 |
| Hawaii | — | — | — | — | — | — | — | — | 1 | — | — | — | — | — | — | — |
| Idaho | 71 | 70 | 1 | 3 | 140 | 130 | 73 | 85 | 93 | 89 | — | 2 | 7 | 11 | 50 | 41 |
| Illinois | 1,120 | 940 | 986 | 767 | 105 | 117 | 3 | 4 | 3 | 6 | 176 | 209 | 46 | 61 | 302 | 364 |
| Indiana | 602 | 542 | 526 | 443 | 143 | 139 | — | 1 | — | 1 | 133 | 182 | 27 | 45 | 341 | 343 |
| Iowa | 854 | 881 | 819 | 784 | 127 | 102 | 30 | 28 | 29 | 30 | 295 | 553 | 67 | 72 | 429 | 518 |
| Kansas | 484 | 467 | 63 | 71 | 73 | 103 | 64 | 66 | 82 | 71 | 35 | 46 | 19 | 27 | 124 | 247 |
| Kentucky | 63 | 66 | 40 | 39 | 141 | 168 | — | 2 | — | 2 | 61 | 60 | 32 | 48 | 518 | 529 |
| Louisiana | 32 | 35 | 10 | — | 58 | 38 | — | — | — | — | 4 | 4 | 5 | 5 | 47 | 45 |
| Maine | — | — | — | — | 31 | 35 | — | — | — | — | — | — | 18 | 19 | 129 | 120 |
| Maryland | 53 | 30 | 49 | 25 | 66 | 73 | 6 | 7 | 6 | 7 | 6 | 13 | 34 | 34 | 100 | 108 |
| Massachusetts | — | — | — | — | 31 | 25 | 1 | — | 1 | — | — | — | 15 | 10 | 55 | 65 |
| Michigan | 144 | 129 | 123 | 124 | 197 | 125 | 13 | 9 | 18 | 8 | 77 | 83 | 112 | 100 | 363 | 353 |
| Minnesota | 462 | 457 | 295 | 280 | 308 | 233 | 56 | 50 | 65 | 57 | 137 | 175 | 153 | 174 | 595 | 510 |
| Mississippi | 86 | 78 | — | 3 | 38 | 44 | — | — | — | — | 9 | 11 | 6 | 7 | 52 | 43 |
| Missouri | 397 | 391 | 173 | 149 | 166 | 179 | 8 | 4 | 10 | 5 | 71 | 88 | 23 | 20 | 541 | 565 |
| Montana | 163 | 140 | — | — | 113 | 90 | 94 | 88 | 119 | 113 | 4 | 7 | 17 | 19 | 84 | 64 |
| Nebraska | 603 | 591 | 426 | 362 | 43 | 52 | 35 | 83 | 54 | 95 | 80 | 121 | 65 | 56 | 223 | 240 |
| Nevada | — | — | — | — | 22 | 17 | 20 | 14 | 26 | 19 | — | — | 3 | 7 | 13 | 13 |
| New Hampshire | — | — | — | — | 31 | 43 | — | — | — | — | — | 1 | 16 | 12 | 107 | 102 |
| New Jersey | 4 | 4 | — | 1 | 25 | 21 | — | — | — | — | 9 | 6 | 8 | 7 | 21 | 38 |
| New Mexico | 10 | 3 | 4 | 2 | 94 | 65 | 26 | 35 | 28 | 34 | 1 | 2 | 4 | 3 | 25 | 22 |
| New York | 29 | 32 | 36 | 33 | 287 | 267 | 1 | 17 | 17 | 17 | 25 | 23 | 221 | 256 | 675 | 725 |
| North Carolina | 98 | 93 | 107 | 83 | 157 | 177 | — | — | — | 1 | 19 | 21 | 34 | 32 | 302 | 287 |
| North Dakota | 433 | 444 | 20 | 25 | 16 | 6 | 95 | 72 | 130 | 86 | 30 | 55 | 44 | 35 | 124 | 141 |
| Ohio | 479 | 418 | 364 | 270 | 247 | 239 | 13 | 10 | 13 | 10 | 129 | 179 | 84 | 88 | 480 | 590 |
| Oklahoma | 71 | 61 | 13 | — | 110 | 128 | 21 | 34 | 22 | 35 | 11 | 16 | 4 | 3 | 229 | 196 |
| Oregon | 40 | 77 | 3 | 1 | 143 | 125 | 60 | 129 | 93 | 167 | 2 | 3 | 16 | 22 | 92 | 104 |
| Pennsylvania | 109 | 54 | 95 | 43 | 352 | 389 | 17 | 23 | 38 | 23 | 98 | 120 | 173 | 182 | 635 | 776 |
| Rhode Island | — | — | — | — | 2 | — | — | — | — | — | — | — | — | — | 2 | — |
| South Carolina | 26 | 36 | 15 | 17 | 41 | 66 | — | — | — | — | 7 | 14 | 4 | 8 | 86 | 79 |
| South Dakota | 278 | 270 | 130 | 101 | 34 | 26 | 96 | 77 | 106 | 108 | 79 | 92 | 63 | 74 | 181 | 130 |
| Tennessee | 53 | 45 | 22 | 13 | 160 | 182 | — | — | — | — | 35 | 59 | 32 | 19 | 431 | 402 |
| Texas | 206 | 152 | 61 | 42 | 396 | 280 | 23 | 20 | 26 | 21 | 53 | 55 | 21 | 16 | 611 | 490 |
| Utah | 7 | 7 | 1 | — | 113 | 129 | 51 | 30 | 54 | 36 | 4 | 8 | 23 | 21 | 97 | 84 |
| Vermont | 1 | 1 | 1 | 2 | 45 | 49 | 2 | 3 | 3 | 4 | — | — | 61 | 61 | 166 | 219 |
| Virginia | 30 | 24 | 23 | 14 | 126 | 146 | 2 | 3 | 2 | 3 | 23 | 25 | 66 | 48 | 427 | 515 |
| Washington | 59 | 67 | 8 | 3 | 158 | 106 | 50 | 62 | 74 | 76 | 4 | 1 | 17 | 23 | 82 | 81 |
| West Virginia | 1 | 1 | 1 | 1 | 59 | 81 | — | — | — | — | 9 | 11 | 14 | 12 | 87 | 124 |
| Wisconsin | 176 | 122 | 173 | 143 | 632 | 496 | 79 | 82 | 85 | 89 | 88 | 151 | 498 | 528 | 1,324 | 1,399 |
| Wyoming | 7 | 6 | — | 3 | 67 | 58 | 35 | 46 | 43 | 50 | 1 | 3 | 4 | 3 | 31 | 28 |
| U.S. Govt. | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Miscellaneous[4] | — | — | — | — | 6 | 6 | — | — | — | — | — | — | 1 | — | 24 | 9 |
| TOTAL | 7,660 | 7,172 | 4,716 | 3,928 | 5,734 | 5,352 | 1,255 | 1,287 | 1,518 | 1,501 | 1,797 | 2,478 | 2,164 | 2,280 | 10,898 | 11,239 |

Source: Farm & Industrial Equipment Institute

[1]Includes revisions for prior months.

[2]For making bales of under 200 lbs.

[3]Pull-type, mounted, self-propelled.

[4]Sales reported as miscellaneous are retail sales which cannot be classified by state or as U.S. Government. They include sales and dispositions that do not go through usual marketing channels such as gifts to non-profit organizations, intra-plant or company transfers, etc.

been critical (of the standards), but they're not here.

"It's a national scandal. The taxpayers pay because the law gives a license to maim. The only people who can change it are the trial lawyers."

**Hahn:** "There's an opportunity for those of you trial lawyers who are qualified to work with us, perhaps on a joint (safety) committee. We need dialogue to bring all points of view together."

**Libbra:** "With all due respect, how many of you have driven a combine? Manufacturers never come back to me to see about performance and safety. Until government takes a lead on this, it's not going to get done. You have to have political

(MORE, next page)

## Value of U.S. Farm Equipment Exports by Countries of Destination

(Value in Thousands of Dollars)

| Country | 1984 | 1985 | 1986 | 1987 |
|---|---|---|---|---|
| **Western Hemisphere** | | | | |
| Canada | $891,074 | $791,762 | $649,405 | $646,049 |
| Mexico | 113,912 | 214,838 | 76,496 | 67,894 |
| Guatemala | 3,610 | 3,719 | 5,034 | 4,603 |
| Honduras | 5,890 | 3,884 | 3,486 | 4,761 |
| El Salvador | 3,661 | 2,397 | 2,471 | 2,366 |
| Costa Rica | 6,306 | 5,073 | 3,718 | 3,954 |
| Panama | 2,704 | 3,396 | 5,057 | 7,811 |
| Trinidad | 2,544 | 2,410 | 1,979 | 2,357 |
| Dominican Republic | 5,545 | 4,934 | 11,925 | 14,502 |
| Colombia | 16,191 | 11,989 | 12,349 | 17,973 |
| Jamaica | 4,398 | 3,210 | 2,537 | 5,797 |
| Venezuela | 23,904 | 43,193 | 54,116 | 57,265 |
| Brazil | 16,423 | 17,707 | 18,447 | 22,619 |
| Argentina | 10,136 | 5,283 | 4,695 | 15,417 |
| Bolivia | 3,636 | 3,382 | 3,127 | 2,115 |
| Chile | 5,581 | 7,385 | 5,638 | 8,462 |
| Ecuador | 6,858 | 11,056 | 11,044 | 6,051 |
| Peru | 7,052 | 4,079 | 6,131 | 5,812 |
| Paraguay | 1,536 | 1,653 | 3,156 | 2,874 |
| **Europe** | | | | |
| Denmark | 2,467 | 1,983 | 2,933 | 5,797 |
| Sweden | 9,066 | 3,445 | 3,366 | 9,882 |
| United Kingdom | 68,267 | 53,285 | 53,344 | 63,063 |
| Netherlands | 7,586 | 6,850 | 12,463 | 12,052 |
| Belgium | 53,832 | 23,595 | 40,770 | 49,830 |
| France | 89,374 | 60,232 | 68,371 | 95,630 |
| West Germany | 67,436 | 56,817 | 51,695 | 55,058 |
| Hungary | 10,955 | 12,741 | 13,151 | 8,763 |
| Switzerland | 3,204 | 2,441 | 2,701 | 2,149 |
| Spain | 10,986 | 9,760 | 20,838 | 22,150 |
| Italy | 8,610 | 7,572 | 13,150 | 13,218 |
| Greece | 22,295 | 18,094 | 5,045 | 2,169 |
| **Middle East** | | | | |
| Israel | 16,958 | 13,844 | 7,459 | 7,232 |
| Saudi Arabia | 257,307 | 96,269 | 73,559 | 115,555 |
| Turkey | 2,559 | 1,975 | 3,534 | 4,905 |
| Jordan | 3,664 | 2,525 | 942 | 2,938 |
| **Asia and Pacific** | | | | |
| Pakistan | 1,107 | 687 | 2,036 | 2,719 |
| Singapore | 13,100 | 4,315 | 5,264 | 8,057 |
| China (Taiwan) | 2,296 | 2,635 | 2,727 | 3,304 |
| China (P.R.C.) | 16,894 | 6,545 | 11,950 | 9,634 |
| Philippines | 4,045 | 1,967 | 2,297 | 2,525 |
| Korea | 5,236 | 3,294 | 2,706 | 5,929 |
| Japan | 20,196 | 17,458 | 18,876 | 25,949 |
| Australia | 214,075 | 141,506 | 47,670 | 49,110 |
| New Zealand | 5,293 | 3,723 | 2,706 | 2,108 |
| **Africa** | | | | |
| Algeria | 5,133 | 4,418 | 6,168 | 4,680 |
| Morocco | 256 | 4,148 | 526 | 4,156 |
| Sudan | 4,498 | 2,163 | 3,811 | 5,902 |
| Nigeria | 2,538 | 5,856 | 5,967 | 4,483 |
| Egypt | 11,436 | 22,510 | 15,876 | 4,680 |
| Rep. South Africa | 59,537 | 29,370 | 25,011 | 24,034 |
| **Total U.S. Exports, Farm & Industrial Equipment** | $2,235,014 | $1,854,772 | $1,466,690 | $1,579,894 |

Source: U.S. Dept. of Commerce, International Trade Admin., Office of Capital Goods and International Construction.

## NOTEBOOK *(from pg. 11)*

leadership to go with the voluntary stuff. With a lawyer, at least you get access."

**Skromme:** "You folks have a lot of expertise; you've talked with a lot of farmers. You know what causes accidents. Let's form a committee and talk."

**Habush:** "I am willing to try to help ag engineers to design farm equipment — I have done it in a courtroom. But (a joint committee) is pure manure. It's ridiculous. They *know* how to design out hazards. But it's cheaper to pay an occasional claim than to retrofit."

**Hightower:** "I think it would be unproductive. Nothing will be done until the political process makes it happen. You (lawyers) have the ability to forge coalitions, to insert yourselves into the political process....I beat (the big farm organizations) in the political process. There are several true family farm organizations, and you can put a coalition together. Representatives and senators can be turned around on these matters."

**Philo:** "There are many farmers, manufacturers and dealers in trouble. We're dumping on manufacturers, on farmers, etc. But it's a societal problem."

One thing I'll say for ATLA: They end their sessions on time. I came away from it wondering if everything is going to continue pretty much the way it has for too long:

1. Farmers take risks, the prosperous ones as well as the economically distressed ones. It's part of their culture. Eventually, some take one risk too many.

2. Farmers' attorneys take equipment makers to court, often very successfully.

3. Manufacturers step up efforts to make machines safer, often successfully. They also work in the political process to alter the tort system, often not very successfully.

If enough of these trends continue indefinitely, there won't be any farmers left. If there are any equipment makers left, their fail-safe equipment will be so unaffordable that it won't make any difference how many farmers there are. Clearly, some things have to happen to change the trends.

Some questions:

Would a joint committee of engineers, farmers, lawyers and other in-

## Farm Equipment Exports by Type of Product

| Product | Jan.-Dec. 1985 Quantity | Jan.-Dec. 1985 Dollar Value in Thousands | Jan.-Dec. 1986 Quantity | Jan.-Dec. 1986 Dollar Value in Thousands | Jan.-Dec. 1987 Quantity | Jan.-Dec. 1987 Dollar Value in Thousands |
|---|---|---|---|---|---|---|
| Combines, pull-type | 829 | $13,423 | 1,208 | 25,192 | 1,734 | $34,099 |
| Combines, self-propelled | 3,942 | 170,229 | 3,729 | 126,771 | 3,623 | 135,010 |
| Cultivators, tractor-drawn or mounted | 2,177 | 5,876 | 1,323 | 2,972 | 968 | 2,295 |
| Cultivators, NEC, and Weeders | 3,571 | 6,052 | 1,254 | 3,504 | 3,713 | 4,812 |
| Farm Elevators and Blowers | 1,766 | 5,770 | 1,877 | 3,847 | 1,498 | 3,795 |
| Farm Wagons and Carts | 833 | 2,021 | 1,877 | 3,847 | 1,197 | 2,041 |
| Parts for Farm Wagons and Carts | — | 897 | — | 701 | — | 952 |
| Fertilizing Machines | 4,580 | 13,820 | 6,375 | 13,831 | 4,461 | 9,772 |
| Forage Harvesters | 1,655 | 19,861 | 1,125 | 20,863 | 1,046 | 22,655 |
| Harrows, Disk | 1,681 | 7,768 | 866 | 3,111 | 920 | 3,524 |
| Harrows, NEC, & Soil Pulverizers | 4,266 | 4,764 | 3,014 | 3,505 | 4,688 | 5,030 |
| Parts for Harrows, Stalk Cutters & Soil Pulverizers | — | 9,292 | — | 3,745 | — | 3,816 |
| Harvesting Machines, NEC | 5,329 | 75,125 | 3,858 | 43,489 | 3,603 | 38,503 |
| Harvesting Machine Parts | — | 129,487 | — | 123,102 | — | 115,839 |
| Hay Balers | 4,387 | 32,563 | 4,311 | 31,340 | 5,429 | 41,400 |
| Haying Machines, NEC (incl. rakes & tedders) | 2,722 | 17,083 | 2,121 | 14,367 | 2,439 | 17,655 |
| Parts for Haying Machines | — | 14,845 | — | 12,766 | — | 15,703 |
| Mowers, Cutterbar, tractor-drawn | 1,400 | 2,895 | 1,475 | 3,138 | 985 | 3,042 |
| Mowers, Rotary, tractor-drawn (excl. lawn mowers) | 7,481 | 5,691 | 9,395 | 6,210 | 11,388 | 5,953 |
| Mowers, NEC, tractor-drawn (excl. lawn mowers) | 2,372 | 6,647 | 1,686 | 5,188 | 1,480 | 6,597 |
| Planting Machines | 3,340 | 7,816 | 1,799 | 7,342 | 2,134 | 7,216 |
| Plows, Disk | 853 | 2,357 | 672 | 1,418 | 669 | 1,651 |
| Plows, Moldboard | 1,654 | 5,351 | 480 | 1,765 | 1,380 | 4,358 |
| Plows & Listers, NEC | 3,272 | 9,055 | 2,486 | 6,627 | 4,247 | 7,609 |
| Parts for Plows, Listers, Cultivators & Weeders | — | 9,184 | — | 8,118 | — | 9,393 |
| Seeding Machines | 8,599 | 18,709 | 7,267 | 14,862 | 4,591 | 9,637 |
| Parts for Planting, Seeding & Fertilizing Machines | — | 13,479 | — | 11,888 | — | 9,763 |
| Sprayers, Agricultural, including par | 596,475 | 172,763 | 446,459 | 136,554 | 598,055 | 179,147 |
| Farm Tractors: | | | | | | |
| Under 40 PTO HP | 669 | 3,521 | 841 | 4,403 | 881 | 4,862 |
| 40-59 PTO HP | 798 | 8,536 | 570 | 5,682 | 395 | 4,688 |
| 60-79 PTO HP | 818 | 12,279 | 453 | 6,815 | 247 | 3,531 |
| 80-99 PTO HP | 1,164 | 23,580 | 490 | 9,913 | 375 | 9,075 |
| 100-119 PTO HP | 760 | 22,200 | 536 | 18,136 | 429 | 13,629 |
| 120-139 PTO HP | 1,741 | 60,801 | 849 | 29,213 | 825 | 29,019 |
| 140-159 PTO HP | 1,264 | 47,619 | 751 | 27,120 | 655 | 24,101 |
| 160-179 PTO HP | 1,409 | 63,625 | 1,072 | 45,451 | 1,029 | 43,592 |
| 180 PTO HP & Over | 1,793 | 119,052 | 1,175 | 75,166 | 912 | 59,430 |
| Other Farm Tractors | 1,157 | 23,815 | 1,525 | 21,961 | 2,544 | 26,711 |
| Parts for Farm Tractors | — | 566,941 | — | 454,098 | — | 517,150 |

**Source:** U.S. Dept. of Commerce, International Trade Admin., Office of Capital Goods and International Construction
NEC — Not elsewhere counted or classified.

terested parties be able to get anything substantive accomplished? Is there anyone around who's charismatic enough to pull the necessary parties together to form such a group?

Will these lawyers use the political process to force safety practices on the farm or to mandate design features that are now voluntary? Maybe some individuals will, but most will stick to using the court system the way they do now, but perhaps with more intensity than we've seen so far.

Will farm equipment manufacturers reach a point at which they do what they've never liked to do? Will they turn to government to force farmers into processes and adoptions that will cut down on accidents?

I'll agree with Harry Philo on one point. It's a societal problem. And society *can* change itself and its attitudes, as is happening right now with regard to liquor and traffic accidents and their consequences.

Eventually, farmers will have to understand that safe equipment and practices, though sometimes costly, are part of the unavoidable price to be paid if one chooses to farm. And they'll have to perceive the tangible, positive benefits of safety to the point that they will never risk the welfare of their families on anything less.

To get farmers to this point, I think, will involve the best efforts of all segments of agricultural industries, educators, *all* farm groups and, yes, the government. If the lawyers don't want to get involved, so be it. □

# Dollar Value of Farm Equipment Imports by Country of Origin, Jan. 1982-Dec. 1987

(In Thousands)

| Country | Jan.-Dec. 1982 | Jan.-Dec. 1983 | Jan.-Dec. 1984 | Jan.-Dec. 1985 | Jan.-Dec. 1986 | Jan.-Dec. 1987 |
|---|---|---|---|---|---|---|
| Canada | $487,286 | $453,551 | $576,583 | $415,527 | $366,074 | $497,337 |
| Mexico | 11,349 | 18,563 | 10,099 | 8,159 | 6,218 | 11,419 |
| Brazil | 4,780 | 6,424 | 11,395 | 12,214 | 10,967 | 18,877 |
| Sweden | 3,023 | 2,873 | 4,002 | 3,464 | 4,538 | 4,731 |
| Denmark | 4,910 | 5,856 | 7,670 | 9,331 | 7,290 | 9,676 |
| Netherlands | 13,924 | 32,831 | 46,912 | 33,945 | 29,778 | 31,513 |
| United Kingdom | 93,806 | 163,678 | 217,201 | 207,020 | 234,406 | 256,182 |
| Belgium | 25,730 | 23,691 | 27,697 | 29,389 | 42,537 | 46,125 |
| France | 30,804 | 41,333 | 72,605 | 68,681 | 64,556 | 64,776 |
| West Germany | 169,087 | 248,015 | 223,651 | 222,756 | 252,740 | 244,560 |
| Hungary | 7,564 | 2,404 | 11,665 | 5,444 | 1,816 | 5,917 |
| Czechoslovakia | 1,113 | 1,892 | 5,888 | 5,926 | 6,197 | 3,759 |
| Romania | 15,461 | 6,088 | 4,701 | 4,409 | 1,921 | 5,326 |
| Italy | 95,092 | 99,219 | 152,409 | 122,300 | 118,808 | 128,651 |
| Spain | 6,541 | 2,946 | 7,124 | 3,996 | 5,978 | 6,254 |
| Israel | 2,677 | 2,988 | 4,183 | 7,619 | 7,475 | 8,629 |
| New Zealand | 9,792 | 11,885 | 11,220 | 10,725 | 8,123 | 11,012 |
| Australia | 4,662 | 3,209 | 4,568 | 5,421 | 5,941 | 7,159 |
| Japan | 181,056 | 204,818 | 309,757 | 355,577 | 418,780 | 420,852 |
| China (Taiwan) | 2,913 | 3,617 | 5,175 | 5,132 | 6,066 | 7,297 |
| China (P.R.C.) | 1,381 | 1,949 | 3,113 | 2,568 | 3,002 | 5,408 |
| Korea | NA | 852 | 742 | 1,256 | 5,667 | 7,456 |
| U.S.S.R. | NA | 1,255 | 852 | 1,266 | 3,731 | 5,394 |
| TOTAL | $1,179,734 | $1,347,483 | $1,729,402 | $1,557,623 | $1,630,628 | $1,834,925 |

Source: U.S. Dept. of Commerce, International Trade Administration, Office of Capital Goods and International Construction.

# Imports of Farm Equipment by Product

| Product | Jan.-Dec., 1985 Quantity | Jan.-Dec., 1985 Value in Thousands of Dollars | Jan.-Dec., 1986 Quantity | Jan.-Dec., 1986 Value in Thousands of Dollars | Jan.-Dec., 1987 Quantity | Jan.-Dec., 1987 Value in Thousands of Dollars |
|---|---|---|---|---|---|---|
| Knives & Cutting Blades | 11,710,518 | $ 10,240 | 8,741,126 | $ 8,202 | 9,628,822 | $ 10,497 |
| Plows & Listers | 2,555 | 2,700 | 3,363 | 7,962 | 5,532 | 11,246 |
| Cultivators & Weeders | 19,075 | 14,198 | 32,017 | 25,127 | 52,430 | 30,088 |
| Parts of Plows, Cultivators, Weeders & Listers | — | 29,840 | — | 23,536 | — | 30,362 |
| Harrows, Rollers, Stalk Cutters, Soil Pulverizers | 32,375 | 10,844 | 32,442 | 16,987 | 23,565 | 24,614 |
| Parts of Harrows, Rollers, Stalk Cutters, etc. | — | 13,531 | — | 12,157 | — | 24,224 |
| Planting, Seeding & Fertilizing Machinery | 39,976 | 23,633 | 30,288 | 24,074 | 34,137 | 31,550 |
| Parts of Planting, Seeding & Fertilizing Machinery | — | 9,101 | — | 9,858 | — | 11,107 |
| Haying Machinery other than Mowers | 7,661 | 10,426 | 5,347 | 10,588 | 7,650 | 8,002 |
| Mowers except Lawn Mowers | 17,140 | 29,906 | 19,060 | 30,191 | 21,865 | 33,601 |
| Harvesting Machines, NES | 10,312 | 75,217 | 6,858 | 47,808 | 8,248 | 58,184 |
| Parts of Harvesting Machines | — | 56,216 | — | 57,807 | — | 61,911 |
| Farm Wagons & Carts | 4,571 | 4,368 | 3,455 | 3,345 | 3,595 | 4,006 |
| Agricultural Machines & Implements, NES | — | 131,945 | — | 143,876 | — | 161,517 |
| Parts of Agricultural Machines, NES | — | 78,377 | — | 82,488 | — | 129,033 |
| Tractors, Agricultural, Wheel-Type, New, excluding Industrial* | 126,959 | 718,163 | 127,964 | 807,047 | 130,734 | 866,824 |
| Tractors, Agri., Used | 6,605 | 41,883 | 4,110 | 28,367 | 3,834 | 23,641 |
| Parts for Agri. Tractors | — | 285,290 | — | 278,482 | — | 299,551 |
| Walk-Behind Rotary Tillers | 3,889 | 1,765 | 16,035 | 2,470 | 11,545 | 3,302 |

Source: U.S. Dept. of Commerce, International Trade Administration, Office of Capital Goods and International Construction.
NES - Not elsewhere specified.
*Use of the term "industrial" here is understood to refer to such machines as forklifts but not to industrial tractors as commonly defined in the farm and industrial equipment industry.

## New Agricultural Tractor Imports, Jan. 1984-Dec. 1987

(In Units)

| | Country of Origin | Under 40 HP* | 40-79 HP* | 80-99 HP* | 100HP and Over* | HP Not Specifically Provided* | Not Elsewhere Specified, Excluding Industrial, Including Garden Types** | Totals |
|---|---|---|---|---|---|---|---|---|
| 1987 | Belgium | — | 76 | 398 | 422 | — | 2 | 898 |
| | Brazil | 40 | 104 | 28 | — | 2 | 71 | 245 |
| | Canada | 91 | 12 | 146 | 1,373 | 29 | 721 | 2,372 |
| | Czechoslovakia | — | 2 | — | 1 | 740 | — | 743 |
| | France | 26 | 62 | 222 | 1 | 6 | 14 | 331 |
| | Italy | 139 | 217 | 41 | 1 | 17 | 3,548 | 3,963 |
| | Japan | 52,070 | 6,722 | 173 | 53 | 357 | 24,902 | 83,277 |
| | Korea | 686 | — | — | — | — | — | 686 |
| | Mexico | — | 341 | 2 | 1 | 1 | — | 345 |
| | Romania | 477 | 954 | — | — | — | 1 | 1,432 |
| | U.S.S.R. | 758 | 569 | 120 | — | — | 1 | 1,448 |
| | United Kingdom | 3,938 | 15,417 | 1,655 | 174 | 193 | 257 | 21,634 |
| | West Germany | 1,535 | 6,017 | 717 | 44 | 24 | 871 | 9,208 |
| | Yugoslavia | 206 | 803 | — | — | — | 359 | 1,368 |
| | **Totals** | 61,064 | 31,383 | 3,521 | 2,101 | 1,666 | 30,999 | 130,734 |
| 1986 | Belgium | 26 | 67 | 29 | 543 | — | 2 | 667 |
| | Canada | 134 | 41 | 57 | 728 | 35 | 542 | 1,537 |
| | Czechoslovakia | — | 306 | — | — | 541 | 44 | 891 |
| | France | 27 | 85 | 60 | 191 | 2 | 19 | 384 |
| | Italy | 102 | 1,189 | 113 | 41 | 5 | 3,849 | 5,299 |
| | Japan | 52,000 | 15,282 | 134 | 1,850 | 679 | 12,648 | 82,593 |
| | Korea | 527 | 8 | — | — | — | — | 535 |
| | Romania | 29 | 321 | — | — | 145 | — | 495 |
| | U.S.S.R. | 626 | 463 | 114 | 10 | — | 1 | 1,214 |
| | United Kingdom | 4,846 | 16,396 | 1,387 | 21 | 216 | 214 | 23,080 |
| | West Germany | 266 | 8,417 | 1,220 | 80 | 30 | 225 | 10,238 |
| | Yugoslavia | 6 | 195 | — | — | — | 3 | 204 |
| | **Totals** | 58,746 | 43,121 | 3,182 | 3,475 | 1,663 | 17,777 | 127,964 |
| 1985 | Canada | 118 | 66 | 94 | 637 | 786 | 589 | 2,290 |
| | France | 138 | 360 | 193 | 255 | 4 | 42 | 992 |
| | Italy | 267 | 1,501 | 143 | 205 | 20 | 1,105 | 3,241 |
| | Japan | 58,807 | 13,306 | 75 | 76 | 233 | 16,331 | 88,828 |
| | United Kingdom | 5,362 | 11,028 | 1,220 | 565 | 101 | 137 | 18,413 |
| | West Germany | 999 | 6,639 | 1,513 | 473 | 119 | 140 | 9,883 |
| | **Totals** | 66,600 | 34,392 | 3,318 | 2,301 | 1,830 | 18,518 | 126,959 |
| 1984 | Canada | 56 | 74 | 145 | 899 | 1,539 | 985 | 3,698 |
| | France | 2 | 213 | 223 | 755 | 5 | 74 | 1,272 |
| | Italy | 141 | 1,836 | 432 | 329 | 1 | 496 | 3,235 |
| | Japan | 50,723 | 9,347 | 192 | 122 | 298 | 18,591 | 79,273 |
| | United Kingdom | 4,955 | 16,166 | 2,304 | 1,498 | 72 | 330 | 25,325 |
| | West Germany | 124 | 5,333 | 2,113 | 537 | 18 | 46 | 8,171 |
| | **Totals** | 56,782 | 35,428 | 5,626 | 4,195 | 2,207 | 20,642 | 124,880 |

Others in 1985: Czechoslovakia - 591; U.S.S.R. - 406; Netherlands - 389; Belgium - 157.
**Source:** U.S. Dept. of Commerce, International Trade Admin., Office of Capital Goods and International Construction.
*Excluding garden tractors. **Including garden tractors and rototillers.

# FOR YOUR INFORMATION

**Diamond Chain Co.** Literature on its Sapphire roller chain, including dimensions. It's a "light-duty, low-cost chain made to ANSI standards."

**Write in (4) on Reply Card**

**Falk Corp.** "Speed Reducers and Your Bottom Line—a Closer Look" has information on how to evaluate overall lifetime costs of speed reducers, talks about maintenance costs and parts replacement costs.

**Write in (5) on Reply Card**

**Hypro Corp.** A 25-page guide on the company's line of pumps and accessories for the farm, pressure wash and industrial markets. There are 75 pump models described, including ceramic plunger and polypropylene centrifugal pumps.

**Write in (6) on Reply Card**

**Trail-Eze Trailers.** Two brochures with specification and option information on the D16R-D25R and D66-D1200R trailer models.

**Write in (7) on Reply Card**

# BOOK LOOKS

## Protection for Engineers

"Protecting Engineering Ideas & Inventions" is a 223-page legal guide for engineers, scientists and managers. Written by Ramon Foltz, a patent attorney, and Thomas Penn, an engineering manager, it deals with legal issues such as patents, copyrights, trademarks, trade secrets, and secrecy agreements, consultants and outsiders' ideas. It's $39.00 plus $3.00 postage from Penn Institute, Inc., Box 41016, Cleveland, Ohio 44141 (telephone 800-426-7495).

## All About Farm Tires

The third addition of Armstrong Tire Co.'s "Farm Tire Handbook" contains articles by *Successful Farming* magazine writers on selecting proper tires, extending tire life, proper ballasting, compaction and radial tires. There are charts of tires sizes and specifications. It's available from Armstrong dealers or Armstrong Tire Co. 500 Sargent Dr., New Haven, Conn. 06536.

## 2-Cylinder Deere Days

"How Johnny Popper Replaced the Horse" covers the 40-year history of John Deere two-cylinder tractors. It's available for $24.95 plus $3.00 (and $1.56 sales tax for Illinois residents) from John Deere at 1400 3rd Ave., Moline, Ill. 61265.

## Kids' Tractor Storybook

"Johnny Tractor and His Pals" is being published by John Deere 30 years after its original appearance. It's a storybook for kids. Priced at $2.95, it is available from John Deere dealers.

# August U.S. Retail Sales: Drought Takes Its Toll

Sales of tractors and self-propelled combines were lower in August than a year earlier, primarily because of drought. However, sales of big two-wheelers in August, 1987, were unusually strong because Case IH was running an aggressive marketing effort at that time to clear out existing inventory to make room for the Magnum series. Four-wheeler sales in August continued strong, as were sales of 40-99 hp tractors and hay tools.

UNIT RETAIL SALES

| Equipment | August 1988 | August 1987 | % Change | January-August 1988 | January-August 1987 | % Change |
|---|---|---|---|---|---|---|
| Farm Wheel Tractors: | | | | | | |
| 2-Wheel Drive | | | | | | |
| Under 40 HP | 3,565 | 4,367 | (18.4) | 39,713 | 43,793 | (9.3) |
| 40 & Under 100 HP | 2,332 | 2,182 | 6.9 | 22,623 | 20,006 | 13.1 |
| 100 & Under 140 HP | 229 | 901 | (74.6) | 2,756 | 2,836 | (2.8) |
| 140 HP & Over | 758 | 2,049 | (63.0) | 6,894 | 5,744 | 20.0 |
| Total 2-Wheel Drive | 6,884 | 9,499 | (27.5) | 71,986 | 72,379 | (.5) |
| 4-Wheel Drive | | | | | | |
| Under 200 HP | 48 | 22 | 118.2 | 603 | 303 | 99.0 |
| 200 HP & Over | 101 | 66 | 53.0 | 1,055 | 554 | 90.4 |
| Total 4-Wheel Drive | 149 | 88 | 69.3 | 1,658 | 857 | 93.5 |
| Total Farm Wheel Tractors | 7,033 | 9,587 | (26.6) | 73,644 | 73,236 | .6 |
| Combines (Self-Propelled) | 378 | 740 | (48.9) | 3,037 | 2,474 | 22.8 |
| Balers (Bales under 200 lbs) | 607 | 599 | 1.3 | 4,578 | 4,314 | 6.1 |
| Forage Harvesters (Shear Bar Type) | 238 | 230 | 3.5 | 1,382 | 1,317 | 4.9 |
| Mower Conditioners | 1,021 | 948 | 7.7 | 8,608 | 8,917 | (3.5) |

## OPEDA Reports on Retail Markets

The Outdoor Power Equipment Distributors Assn. has reported on its research about retail outlets for outdoor power equipment.

*Walk-behind lawn mowers:* Farm-oriented retail outlets get 2 percent of the total. Biggest share, 28 percent, goes to national retail outlets (i.e., Sears); 17 percent to hardware stores; 15 percent to discount stores, 12 percent to lawn and garden centers, 7 percent each to department stores and home centers, and 3 percent to outdoor power equipment dealers.

With larger equipment, the market shares change.

*Riding mowers:* Farm-oriented outlets, 4 percent; lawn and garden centers, 26 percent; national retailers, 15 percent; outdoor power dealers and hardware stores, 11 percent each; equipment rental dealers, 8 percent; discount stores, 6 percent; and home centers, 4 percent.

*Lawn and garden tractors:* Farm-oriented outlets, 7 percent; national retailers, 28 percent; lawn and garden centers, 15 percent; outdoor power dealers, 13 percent; discount and hardware stores, 8 percent each; home centers, 7 percent; and equipment rental dealers, 3 percent.

## Deere's 9 Months: Net of $235 Million

Deere & Co. has reported net earnings for the first nine months of fiscal 1988 (ended July 31) of $235 million, compared with a loss of $132 million in 1987. Sales for the three quarters reached $3.883 billion, compared with $2.817 billion in 1987. Deere had an extended labor dispute in the first half of 1987.

In the third period, earnings were $81 million, compared with $25 million in the same 1987 quarter. Quarterly sales were $1.388 billion in 1988 and $1.132 billion a year earlier.

## Canadian Sales Weakened in August

Retail sales of farm equipment in Canada through the first eight months were off slightly from 1987 levels after drought took its toll in August. Tractor unit volume was down by a third for the month to 1,043 units from 1,556, but the year-to-date total was off only 3 percent at 10,587 units.

Major tractor sales declines in the eight months were in under-40-hp models (off 12 percent at 2,846 units) and two-wheel-drive-over-100-hp models (off 17 percent at 1,361 units). Four-wheel-drive tractors showed a 36 percent rise in unit sales to 667 over the year.

Mower conditioner sales were up 16 percent for August and 18 percent for the year at 2,288 units. Balers (smaller type) were off 11 percent for the year at 1,095, but big balers were up 9.5 percent at 2,564 units. Forage harvesters were up 30 percent at 380. Self-propelled combines were off by a third in August at 163 units, down 6 percent for the year at 539; pull-type combines were down 38 percent for the year at 116. Through the eight months, swather unit sales rose 30 percent to 701 while sales of pull-types were off 17 percent at 778.

Source: Canadian Farm & Industrial Equipment Institute, Burlington, Ont., telephone 416/632-8483.

## Record Sales Year for Toro

Toro Co., Minneapolis, Minn., had sales in the fiscal year ended July 31 of $609 million, up 17 percent on 1987's previous record of $521 million.

Earnings rose 18 percent from $17 million to $20 million.

K.B. Melrose, CEO, said that the acquisition of Wheel Horse Products, Inc., offset lost walk power mower sales.